Regulatory Doughnut Hole between the Aquifer Protection Permit and the Air Quality Permit issued to the Rosemont Copper Company by the Arizona Department of Environmental Quality

Submitted by Stanley R. Hart, Green Valley, Arizona, July 4, 2013.

I believe I have legal, statutory and professional standing to provide compelling comments on these permits. I live near Madera Canyon, about 8 miles from the proposed mine, and well within the areas of environmental concern and impact of the mine. I hold a Ph.D. in geochemistry, and my research over the past 50 years has had a major focus on the kinetics and thermodynamics of chemical interactions between natural waters and various rock types, with a specialization in the isotopic geochemistry of lead (Pb) as a tracer of water-rock reactions. I was a full professor at M.I.T. for 15 years, and a Senior Scientist at the Woods Hole Oceanographic Institution for 20 years (now Emeritus from that institution). I have published more than 230 peer-reviewed papers, and am a member of the American Academy of Arts and Sciences, and the National Academy of Sciences. I testified last summer as an Expert Witness in the Administrative Hearing on the "Shinsky" Appeal of the Aquifer Protection Permit issued by ADEQ.

1. Overview

I believe there is a regulatory "copper doughnut hole" that exists between the Aquifer Protection Permit (APP) and the Air Quality Permit (AQP) that Rosemont has acquired from the Arizona Department of Environmental Quality. The appeal of the APP was recently denied by the hearing judge, and the AQP is under appeal, scheduled to be heard in a few weeks. Given the grossly biased ruling in the APP (the administrative law judge did not accept a single point of the appellants, out of perhaps 50 issues in contention), it is likely the appeal of the AQP will also be denied. The Forest Service has just issued a draft Final Environmental Impact Statement that in no way asserts significant protection for air and water quality. Thus the Army Corp of Engineers and the EPA are basically the last line of environmental defense against the compelling evidence for serious degradation of air and water quality, through their jurisdiction of the Section 404 Permit of the Clean Water Act. Federal protection is crucial, as the current political and policy climate in Arizona is doggedly pro-mining, and mindfully incognizant of environmental values.

2. The Copper Doughnut Hole

Simply stated, for receipt of the APP, Rosemont was required to demonstrate that mine processes will not produce any exceedances of Arizona Water Quality Standards (or of pre-existing ambient levels) at the various point of compliance (POC) wells (AAC R18-9-A202(A)(8)). For the AQP however, Rosemont **is not** required to prohibit visible emissions from exiting the boundaries of the mine area whenever the wind speed exceeds 25 miles per hour (Pima County SIP Rule 343). Since major dust emission events will typically only occur at wind speeds greater than 25 mph, this rule in effect does not prohibit significant tailings dust from exiting the property, and traveling beyond the POC well locations in the APP. For example, for dust 1 *micron* in diameter, the transport flux at wind speeds of 50 mph will be 13 times higher

than at 25 mph (Ginoux et al., J. Geophysical Research, 106, 20255-20273, 2001). Wind speeds of 25 mph are common at 5000 feet elevation in the Santa Rita Mountains, and 50 mph winds are not unusual. This fine-grained chemically-active tailings dust will be deposited throughout a downwind area, in effect producing a mobile tailings layer that will then interact very actively with rainfall, thereby producing a very high potential for contamination of surface waters and the underlying aquifer. As this contamination will occur beyond the scope of the APP POC wells, it will not violate any of the legal governing statutes protecting the aquifer.

If only 1% of the tailings were eroded each year and deposited in a down-wind area equal in size to the surface area of the tailings pile, the annual dust/particulate layer would be 1.1 inches thick, and would have been exposed to an annual rainfall of ~ 15 times this value. As I argued in testimony given at the APP Appeal hearing (and documented in Rosemont commissioned studies), this water/rock interaction will almost certainly cause an exceedance of the Arizona Aquifer Water Quality standards for many toxic elements, and will of course then also cause surface waters to violate the U. S. Clean Water Act. Thus a situation will arise where neither the APP nor the AQP will offer any meaningful protection for aquifer or surface water quality (a regulatory "doughnut hole"). With the APP appeal recently denied, the burden of protection at the state level really falls to the Air Quality Permit. Certainly this permit should be amended to be a Class 1 Permit (as are the permits for both the open-pit Sierrita and Mission Mines on the west side of Green Valley). Given the dry-stack tailings design, Rosemont will obviously have a much more significant dust emissions problem than these other mines, where the tailings are more or less continuously ponded. If the Pima County SIP Rule 343 is inviolate, then some avenue should be found at the federal level for regulating dust emissions from the tailings piles at high wind speeds, thereby closing this regulatory doughnut hole. If the application for a 404 Permit is denied, then these issues all become moot.

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